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NATURAL HISTORY NOTES FROM THE WEST INDIES.

By Percy Rendall, M.D., F.Z.S.

Early this year I spent three months in the Antilles collecting zoological specimens of all kinds. The bulk of this time was passed in Trinidad, or, as the Indians call it, Iëre, and most of my collecting was done in the south-west province known locally as the district of Savana Grande. Geographically both this island and Tobago (which is nineteen miles further north) are portions of the South American Continent, and the respective faunas bear strong resemblance therefore one to the other. The small mammals from these islands are, however, so little known that I contribute a few remarks upon those I captured.

Most of my work was done with break-back traps baited with banana, Indian corn, and sweet cassava, but the last named was much the deadliest. My rendezvous was a Government rest-house, but though I had genuine primæval forest within a mile, I found that all the small things were to be taken along the course of a little stream, with a growth of balisiers and mixed bush, that fringed the cultivated but partly-cleared gardens and cocoa groves.

For the scientific names I am indebted to my friend Mr. Oldfield Thomas. The English equivalents are those used by the "natives," who seem to be any colour, and combine strains of

French, Spanish, and Indian blood with a basis generally of emancipated negro. The native is more useful to the naturalist than to the struggling planter, as he objects to all work, though he often has a sporting tendency.

Didelphis marsupialis. Large Manicou. — Ruthless war is waged by all and sundry upon these Opossums, which have a great predilection for poultry. They are to be found in Trinidad, Tobago, and St. Vincent to my knowledge, and in the last-named island I found that on moonlight nights they were to be shot in certain trees, the fruit of which acted as an unfailing lure. I have seen them killed in the day time with a mongrel pack of dogs, but their habits are generally nocturnal. They used to show their carnivorous propensities by eating my trapped victims; sometimes carrying the trap away also. One female which I dissected carried seven immature young in her pouch.

Philander trinitatis. The Yellow-eyed Manicou. — Though this little animal was only described by Mr. O. Thomas about three years ago, I found it plentiful and generally distributed wherever I collected.

Marmosa murina. The Black-eyed Manicou.—This is much the most common of the three marsupials found in Trinidad. Many partially eaten rats in my traps I fancy may be put to their credit, though banana was their favourite bait. One which I caught in a hollow stump in the daylight opened its mouth, and as it showed its teeth "swore" at me in the most unmistakable manner, with a sound like the rasping of a metal comb. It is found in Tobago.

Dasyprocta aguti.—This animal is the usual species taken in Trinidad; it is hunted with dogs and eaten by the natives, who will not let their hounds eat the entrails, which they say "disagree with them, as they feed on poisonous berries." Whether this is true I know not, but they always carefully disembowel these rodents and hang the intestines out of reach.

Dasyprocta cristata.—The main difference to the eye in *D. aguti* is the red rump, which in this species has a markedly yellowish hue. Before I brought the two species back from Trinidad, only the former had been recorded from that island. Both of them give excellent sport, and I have had several good runs with dogs in their pursuit. One that the dogs ran into in

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the open squealed like a rabbit sometimes does under similar circumstances. In the forest they make regular tracks or paths by constantly taking the same line of country. They are very smart and up to every wrinkle, often escaping from some bolt-hole which has been overlooked, whilst they are being dug out, after having been run to earth. The native hunters frequently remark that "an old Agouti always knows where he is going when he once starts to run"—and admit *that he often fools them!*

Cœlogenys paca. The Lapp.—This, the largest rodent of Trinidad, is such good eating that the Catholics have thought it worth while to obtain special permission from the Pope to sanction its flesh as a Lenten comestible! They say it is amphibious and ranks with fish. Certainly it dives and swims well when it is hunted, and it is perhaps convenient for them that the See has such a slender zoological knowledge. Its earth is always a hole in a bank, often amongst the tangled roots of some large tree, and is generally near water. It is rapidly becoming rare in the neighbourhood of the most elementary civilization. It is not found in Tobago.

Tatusia novemcincta. The Tattu.—Some of the commonest signs of wild life in the high woods are the scratchings which this Armadillo makes amongst the dead leaves, &c., in the damper spots. I have eaten this animal, and even prefer it to the "Lapp." One female which I examined had four fœtuses in utero in the middle of February. Its habits are nocturnal, and its home is invariably some hole in a bank.

Sciurus æstuans. Squirrel.—In both Tobago and Trinidad the cocoa-planters employ a man to shoot these little animals, as they raid the trees and destroy an immense amount of cocoa-pods. Though they may in some cases destroy only the outer covering of the pods, they do the Woodpeckers and other birds a service in many cases, by making their work of destruction the more easy. They are sometimes kept in the ordinary Squirrel's cage, and I have seen them thriving in captivity in more than one instance.

Rhipidomys couesii. Tree Cocoa Rat.—This species I found very rare and difficult to secure. Traps have to be set for them *in* the cocoa trees, and at a considerable height from the ground.

Oryzomys brevicauda. The Garden Rat.—Widely distributed in both islands; the bulk of my captures consisted of this species, and a long series showed that there was considerable difference in the colour of the pelage.

Nectomys palmipes. Water Rat.—On the margins of the small streams this rat was always taken, and never away from water. The immature specimens were much darker and the pelage much shorter than in the adults.

Akodon urichi. Black Garden Rat.—Difficult to catch, and scarce everywhere; only taken in Trinidad.

Mus rattus. Black Rat.—This species was only secured in one cocoa shed, and had only taken up its quarters there after the Brown Rat had been poisoned.

Mus decumanus. Common House Rat.—Generally distributed wherever I collected. They were trapped in the out-door kitchens used in the West Indies, but in the day time retired to the bush to return at nightfall

Mus musculus. House Mouse.—The foregoing remarks also apply to this species. I found both this and the House Rat living in the arrowroot fields in St. Vincent.

Heteromys anomalus. Pouched Rat.—Local in its distribution, and found at some elevation (800 feet). I had reliable information of its existence in Tobago. It is at times caught with both cheeks stuffed with seeds or corn.

Loncheres guianæ. Porcupine Rat.—In Trinidad these curious spiny rats are common on the large mangrove bushes that fringe the mouth of the Caroni river; they are to be seen lying parallel with the branches at some height above the water. They must be pugnacious in their habits, as both their ears and their tails are often found mutilated. The immature of this rodent shows very little difference in the length of the ears compared to the adult, and is in contrast with other small rodents belonging to kindred species. My friend Mr. R. R. Mole, of Trinidad, informs me that they are the chief food of the large water Pythons, and in their excreta he has found great quantities of their typical spiny bristles. I caught one of these rats in Tobago, in a tree a considerable distance from the Great Dog River; it was larger than any of the long series I obtained in Trinidad, and the basal portion of the pelage was more red in coloration.

Echimys trinitatis. Long-tailed Piloui. — Otherwise called the "No-tail Piloui." The fact that some specimens of this species are found to have no tail, which others possess, has led the natives to give to it the second name, under the very excusable belief that it was another species. I understand they are eaten with relish.

Coassus nemorivagus. Deer.—I procured one pair of the horns of this deer, which were said to be the largest ever seen; they measure 5⅛ in. This animal is very plentiful on the borders of the high woods, and does an immense amount of damage to young plantations of cocoa, nutmegs, &c. They are very wary, and though I heard them, and constantly saw their fresh spoor, I never even once got a snap-shot, and I was perpetually on the alert to obtain a complete skin and skull. Very few are ever killed, as they simply scorn the mongrel dogs, who cannot live with them for even a mile, and generally refuse to take up their fresh trail.

There are other points of zoological interest perhaps worthy of note; but, as Mr. Rider Haggard remarks, "that is another story!"

ON THE BREEDING RANGE OF THE YELLOW WAGTAIL IN IRELAND.

By Robert Warren.

The Yellow Wagtail, *Motacilla raii* (according to Yarrell and H. Saunders), is generally distributed as a breeding species throughout England and Wales in all suitable localities. In Ireland it is a remarkable fact that, as far as at present known, the breeding range of this species is restricted within the very limited areas of the shores and islands of four lakes (Loughs Neagh, Carra, Mask, and Corrib); though once, according to Mr. E. Williams of Dublin, a pair bred a few miles from that city. Up to the date of the publication of William Thompson's 'Birds of Ireland' (1849–1851) this bird was only known to breed on the shores of Lough Neagh and Derrywarragh Island; and in his appendix to the third volume the author mentions "visiting, on May 4th, 1850, in company of his friend Mr. Garrett, the Wagtails' breeding haunts on Derrywarragh, where they saw not less than forty of them; in one little piece of pasture three pairs appeared within twenty-five yards of each other, and three or four birds were frequently seen only a few feet apart on the ground, or on wing at the same moment."

Since then the late Lord Lilford found a nest on the shore of Lough Corrib, in Co. Galway; and Mr. W. H. Good, of Westport, Co. Mayo, informed me (in 1891) that he discovered them breeding on the shores and islands of Loughs Carra and Mask, in South Mayo; but it was not until June, 1893, that, in company of my friend Mr. W. Williams, of Dublin, when visiting Lough Carra, that I had the pleasure of seeing and hearing the Yellow Wagtail in its breeding haunt. We had walked from Ballinrobe to the bridge at the end of the lake, and, while watching some Terns fishing, Mr. Williams suddenly exclaimed, "I hear the calls of a Yellow Wagtail"; and shortly after we saw a female with food in her bill, standing on a tall thistle in an oat-field alongside the road. Mr. Williams began imitating the call, and did it so cleverly that in a short time the female was joined by a lovely male; and as he continued to call, a second male also came up to where the other two birds were; but although we spent more than half an hour searching for the nest, we were unable to find it, and had to return disappointed at our want of success. The next evening we saw the birds at the same place, and again searched for the nest without success, but felt quite satisfied that two pairs were breeding at the place somewhere about the oat-field.

On June 5th, 1895, I again came across the Yellow Wagtails, when visiting Lough Mask in company of my friend Mr. R. J. Ussher. Landing on some islands on the western side of the lake, opposite Cushlough, we met two pairs, evidently having nests from the anxiety they evinced while we were exploring the islands; and later in the day, when landing at the Cong end of the lake, we saw a fine male on the rocky shore. The next morning, when proceeding from Cong across Lough Corrib to Currarevagh, Mr. H. Hodgson's place, we met a pair on an island about half-way across the lake; and two days after Mr. Ussher saw two pairs on islands lower down the lake towards Oughterarde, thus showing that the birds were widely distributed along the shores and islands of these two lakes. It is very strange and impossible to explain why these birds should be restricted to these four lakes, while no trace of them in the breeding season is to be found on other lakes throughout the island which are apparently as well suited in every respect.

Mr. R. J. Ussher, who has on two or three occasions thoroughly explored Lough Erne and its islands, has neither met with nor obtained any intelligence of the bird there; nor in his explorations of Lough Ree, on the Upper Shannon, has he come across it. When visiting the Donegal lakes, those of Roscommon, and the midland counties, no trace of it has been found. Again last summer, when visiting in his company that beautiful lake near Sligo, Lough Gill, and Lough Melvin near Bundoran, we neither saw nor heard anything of this bird. And although I have often explored that fine sheet of water in North Mayo, "Lough Conn," with its companion lake Cullen, the bird has neither come under my notice, nor that of several of my friends who fish the lake every season in May and June, and who are well acquainted with the Yellow Wagtail in England. If it frequented the shores or islands of the lake it could not long elude the notice of those so well acquainted with the bird in its English haunts.

As the Grey Wagtail, *M. melanope*, is commonly known in Ireland as the "Yellow Wagtail," many mistakes are made in confusing the two species, and I have often been told of the Yellow Wagtail nesting in certain localities; but on further enquiry as to where the nests were found, the description of the sites always proved the nests to be those of the Grey Wagtail.

Addendum.—Last June my friend Mr. R. J. Ussher, when exploring the lower end of Lough Corrib between Oughterarde and Galway, met this bird distributed amongst the islands, showing that its haunts were all about the lake, and extended through the three lakes Carra, Mask, and Corrib without a break.—R. W.

A NEW BRITISH WORM.

By the Rev. Hilderic Friend.

My attention was drawn during the last week in July to the fact that in the neighbourhood of Birmingham the China Aster was perishing from some form of blight. On pulling a sickly plant from a flower-bed at King's Hill, Wednesbury, Staffordshire, and examining the roots with a pocket lens, I detected a minute worm. This evidently was the cause of the mischief. On submitting specimens of the annelid to microscopic examination I found it to be an Enchytraeïd; and so far as I am aware it is new to science, unless it has been examined by some of the florists and described in journals which I am unable to examine. I should recommend all periodicals which deal with the flower-garden to copy this description.

The Aster Worm.

Enchytraeus parvulus, *Friend.* This destructive pest is 3–4 mm. or about one-eighth of an inch in length, and when seen at work is of a silvery white colour. It has no coloured blood, and may be called a white worm—no uncommon thing in this group of annelids. It lodges under the epidermis of the root and feeds on the juices and tender vegetable substances, thus absorbing the plant nutriment and preventing the roots from performing their natural functions. It is gregarious, for quite a colony will sometimes be found in one plant. The average number of segments is thirty, and on segment XII. a girdle is developed, somewhat papillose, with a pair of pores associated with pear-shaped bodies. The ventral setæ are absent from this segment, their places being occupied by the pores. In the hinder extremity there are four sets of setæ in each segment, each set containing three setæ. The anterior differs from the posterior, inasmuch as the lateral setæ are in couples and not triplets. Thus in segments II.—XI. we have two setæ in each lateral bundle, and three in each ventral bundle. On segment XII. we find two lateral pairs only, then for a few segments more there are two in the lateral and three in the ventral bundles, while the last ten or dozen segments have four triplets each.

The nerve-cord shows a tendency to enlargement between segments III.–IV. and the brain is pear-shaped with a rounded or convex hinder margin. There is a large head-pore between the prostomium and the first segment, and through this the cœlomic fluid and other floating materials from the body-cavity and head are poured out when a little pressure causes inconvenience to the worm.

The question naturally arises, Can this be the same as Michaelsen's Silver Worm (*E. argenteus*), found on the shores of the Elbe, or not? Unfortunately I do not possess the author's pamphlet, and the digest in Mr. Beddard's monograph is too brief for a decision. The descriptions correspond as far as they go, but I have not been able to verify the account of the nephridia, nor are we told in what way the setæ are disposed, or what the habits of the Elbe species are. In any case *the species is new to Britain*, and its predatory character raises the serious question—What is the best thing for the flower-grower to do if he finds them attacking his asters?

THE BEST REMEDY is the drastic one of pulling up every plant which shows signs of sickness and consigning it instantly to the flames. It might be possible to save some plants by carefully cutting out the roots which appear to be affected; but the operation would have to be performed the instant there were signs of failure, it would have to be conducted with the greatest care and delicacy, and there would still be two risks. Either the plant might succumb to the treatment, or the disease might reappear owing to the eggs of the worm having been left in the roots. The eggs are so minute that even the microscope would be of little service in their detection after they had once been extruded.

There is no doubt but that many of our minute annelids are parasitic. Heretofore, however, we have heard little of their ravages. The reason is probably to be found in the fact that so little was known formerly of annelid anatomy that when a worm was discovered its description lacked scientific precision, and so the different parasitic worms remained uncatalogued and unknown.

TWENTY YEARS ON THE NORFOLK FENS.

By Last C. Farman.

Before entering into details respecting the fauna of the district in which I reside, it will perhaps be best to describe the locality.

The little old-time village of Haddiscoe nestles on the verge of the watery vale of the Waveney, and abuts the main turnpike road. In a north-easterly direction is situate the famous town of Great Yarmouth, some eight miles distant as the crow flies. About the same amount of mileage would take us to the easternmost point of England, *viz.* the town of Lowestoft. Immediately on passing through the village, we reach the celebrated Norfolk fen or marshland, stretching away in a northerly direction as far as the eye can reach, its flatness only broken by the numerous drainage mills dotted about like sentinels. Looking in a north-easterly direction one sees the Herringfleet Hills, covered with heather and bracken and crowned by tall firs. It is but two miles from the village to these hills, to reach which we must cross one of the narrowest parts of the fens by the main road, locally called the dam, bent and twisted about like some huge serpent, and studded on either side with closely planted willows. At the foot of these hills meanders the old brown Waveney, from which this valley takes its name. In the midst of the fir trees we have referred to, ripple the waters of Fritton Lake. This lake during the winter months teems with wildfowl, and decoy pipes are successfully worked, some hundreds of Duck and other species of wildfowl annually having their necks wrung by the decoyman's hands. When winter storms burst upon us, thousands of wildfowl congregate on this lake, and flighting at night they scatter around the district, dropping all over the fens into the weedy ditches and shallows. It is almost needless to state that in such a district, and despite the revenue tax, wildfowlers are numerous, and on favourable nights an almost incessant fusillade is kept up in select spots when heavy rains or some breakage in the river's bank have flooded a few acres.

Having tramped these fens almost daily during the past twenty years, and during the shooting months with a gun for a companion, and having an eye upon the wondrous works of nature, it may prove interesting to the readers of 'The Zoologist' to learn something of my observations during that period. In particular, I, like many, most deeply regret the decrease in several species of our breeding birds.

I will now give a list of the birds which still breed on the fens here; this will not include the broads, where several other species continue to nest, though in diminished numbers. We number Heron, Wild Duck, Teal, Dabchick, Moorhen, Lapwing, Redshank, Common Snipe, Reed Warbler, Reed Bunting, Kingfisher, Sky Lark, Meadow Pipit, Yellow Wagtail, Pied Wagtail, Pheasant, Partridge, and Red-legged Partridge.

HERONS.—There is a Heronry within a short distance of my home, and the birds seem to be fairly numerous throughout the district. Many are daily fishing in the ditches, which abound with Jack, Roach, Tench, Bream, and Perch in plenty, but Eels are scarcer every year, the Heron playing a great part toward diminishing the same. Many a tussle have I witnessed between Heron and Eel. In 1894 I counted twenty-six Herons on a twenty-acre marsh going through a toilet of wing preening, &c.; most of these were young birds. Fortunately for the Heron he is not a table bird, otherwise he might not survive here in such plenty. Specimens of both the Purple and Night Herons have been shot in the locality.

WILD DUCK.—With the common Wild Duck I note a great falling off during the breeding season. In the early days of my observations it was not an uncommon occurrence to stumble across half a dozen clutches of young Ducks whilst tramping across the fens during the month of June. A few couples still breed here, and recently I flushed four in one lot and seven in another at sunrise and sunset. Little parties ranging up to ten in number may be seen tacking about the fens. In a wood not a mile from my home a Wild Duck successfully hatched a family several years in succession on the topmost branch of an oak tree.

Teal.—A few pairs of Teal annually breed here, and I always flush some of the birds from the ditches during the months of August and September.

Dabchick.—A few Dabchicks still remain in the locality, nesting on the Waveney, but I note a great decrease in this species.

Moorhen.—The Moorhen appears to be a very uncertain breeder in this neighbourhood. In the year 1885 scores of these birds nested in the district, and although some hundreds of eggs were taken, wherever one went the little black fluffy young could be seen, while the call of the mother birds and the weep of the young ones could be heard all over the fens. These diminished yearly till none were left. In 1894 we had another inrush, the ditches seemed alive with them, and whilst walking across the fens one morning I counted thirty nests containing eggs. Last year I only saw six nests, and this season I have not noticed one.

Lapwing.—Twenty years ago the Lapwings which nested with us were almost countless, now not one remains. The year 1894 saw the last three couples topple and twist over the old familiar breeding-grounds. What few remain are driven, mainly through steam drainage, to the Suffolk side of the Waveney, where the marsh is yet suitable for them, between the river and the Herringfleet Hills. Owing to the long drought, the land is now almost as hard as rock. The young Lapwings are thus seeking their sustenance by the water's edge at the ditches. A Lapwing—and we suppose it was the same bird—laid white eggs on the same marsh several years in succession.

Redshank.—Redshanks, like the Lapwings, have entirely forsaken the old haunts; fifteen years ago, many couples of these birds nested on the rushy marshes at the foot of the uplands, quite two miles from the river. Just ten years ago the last couple nested there, and in 1894 the last of the Redshanks nested on the Norfolk side of the Waveney. In early spring by the river side it is not uncommon to witness twenty Redshanks in one flock before they pair for nesting. I have noticed this species on the fens in almost every month of the year, and in 1894 I saw one on Christmas Day.

Snipe.—Few Snipe breed with us now,—I have not heard of a nest being found during the past five years. Some, however, lay on the Herringfleet Rands on the Suffolk side with the

Lapwing and Redshank. I generally shoot a few young ones during the month of August, high tides driving them from the Rands to the fen ditches.

Reed Warbler.—The Reed Warbler is nothing near so numerous in the district as of yore. When a youngster, I was fond of trailing through the tall reeds to search for Reed Warbler's nests, and had little difficulty in finding half a score. Now it would take a lot of searching to find that quantity of nests, and judging from the few birds one sees, this species has decreased very much during the past ten years.

Reed Bunting.—The Reed Bunting, like the Warbler, is on the decrease. Several, however, still remain and breed by the side of the deep ditches. Strange to say, though I have lived with these Buntings during a period extending over twenty years, I have only found two nests, one containing five young ones, the other four eggs, which I added to my collection.

Kingfisher.—Alas, for our gaudiest of British birds! Are we to retain it in Norfolk, or will this handsome bird, like the Great Auk, become extinct? It is rare at the present day to see a Kingfisher. I still know one place where a couple annually breed, and fortunate for such the owner of that particular nesting-ground worships their presence as a Hindoo would a god. Woe be to the miscreant who would dare to disturb that pair of sacred fishers. If any bird requires protection in Norfolk, it is the Kingfisher. In the year 1883 Kingfishers were very numerous on the fens, and I could see them daily. Occasionally I noticed as many as half a dozen together. Severe winters and the gun have almost exterminated this beautiful species as far as Norfolk is concerned.

Skylark.—The Skylark breeds profusely all over the marshes, and during nesting-time eggs can be found anywhere and everywhere. During the past twenty years I have found several nests of the Skylark containing young Cuckoos, the latter being very common at present in the gardens and thickets on the verge of the fens.

Meadow Pipit.—Of late years the Meadow Pipit seems to be on the decrease, though several still breed with us. I have seen a few nests myself this season, and allowed the same to remain undisturbed.

Yellow Wagtail.—The Yellow Wagtail is only second to the Skylark in breeding numbers. Annually, at the beginning of April, a large number of these handsome birds visit us, and I have seen some scores of them dotted about the fens. Their bright yellow plumage very much resembles the blossom of the dandelion, which at that time abounds in the locality. I fail to see any decrease on the part of the Yellow Wagtail in the district.

Pied Wagtail.—A pair or two of these nest on the fens, the majority taking to the uplands. I have taken some curious eggs of this species, and have on several occasions found their nests inhabited by a young Cuckoo. We have a liberal supply of Pied Wagtails in Norfolk.

Pheasants.—Pheasants breed all along the verge of the fens, and they seem to thrive and do well on these lowlands. Several breed amongst the tall grass by the side of the river Waveney.

Partridges.—Both the English and Red-legged Partridges nest on the fens, the former in numbers, the latter having very much decreased in the locality of late years. We have not a tithe of the number we had ten years ago.

A friend of mine in this neighbourhood commenced to make a collection of rare birds with his own gun. To give the readers of this Journal an idea of what Norfolk contains in the shape of avifauna, I will mention some of the rarest of the species he obtained, all shot within the last twenty years and within a few miles of my home; such as, Avocet, Spoonbill, Bittern, Scoter, Scaup, Shovellers, Smew, Gargany Teal, Spotted Redshank, Greenshank, Red-throated Diver, Common Arctic and Black Terns (a Sandwich Tern fell to his gun, but he failed to secure it), Little Gull, Pallas's Sand Grouse, Ring Ouzel, Woodlark, Grasshopper Warbler, and Pied Flycatcher. Besides many other waders, he also secured the following:—Curlew, Whimbrel, Golden and Grey Plovers in summer plumage, Turnstone, Sanderling, Little Stint, Temminck's Stint, besides a number of commoner species.

Rails, &c.—The Landrail or Corn Crake is rather rare in the locality. Whilst shooting at Kessingland last September I saw several, probably collected near the sea-coast preparatory to migration. I shot a fine specimen of the Spotted Crake by the

Waveney in 1893, the only one I ever obtained with my own gun. The Water Rail used to be very common, but I seldom see one now. One of this species was shot at Oulton last season without legs. A Woodcock was shot the same day with short stumps, hard as horn; the legs must have been cut or shot off some considerable time, as the bird was in good condition. Speaking of Woodcocks, I saw a pure white specimen which was shot at Acle in 1894. The following white birds have also been shot in the district:—Several Wild Duck, Blackbird, Fieldfare, Starling, Jackdaw, House Sparrow, House Martin, Greenfinch, and Robin with red breast.

Not having sufficient time to give a full list of the rarities killed or seen in the district, I will confine myself to mentioning the following:—Three or four Hoopoes of recent years have have fallen victims, one Golden Oriole, several Waxwings, a Two-barred Crossbill, and a Raven shot on the marshes, besides Grey and Red-necked Phalaropes. As probably most or some of these have previously been duly recorded in these pages, further comment is needless. Two Cranes have fallen to the gun during my period of observation, one of which I saw myself. Several Bitterns have been killed near the river Waveney, two of which fell to the gun of a cousin of mine, as well as a Little Auk. Several of these birds have been picked up all over Norfolk after strong gales from the north-east. I saw several flocks of the famous Pallas's Sand Grouse when visiting us a few years back.

In October, with an easterly wind, come the winter migrants streaming across the fens—thousands of Rooks, Jackdaws, Kentish Crows, Skylarks, Chaffinches, Lapwings, and Golden Plover. I have noticed these birds coming from the sea, tracking after each other six or seven days in succession.

We generally see a few young Golden Plovers in August, but the main body arrive about November 27th, and a number remain till severe weather drives them elsewhere. We had some thousands of these birds last winter on the fens, mingled with which were Dunlins and Ring Plovers. We usually have a good day or two with the Snipe in November, but these birds have very much diminished during the past twenty years, our marshes becoming more solid and unsuitable for them, and we have to tramp the ditches for the few couple we yearly obtain. We have some good sport with Snipe during moonlight weather by sitting near a swamp of shallow water facing the moon, and I have knocked over several in an evening. They come screaming through the air like bullets, and dropping into the shallow water can be easily discerned in the moonlight, and, with care, shot sitting. You do not see them when once on the wing. Lapwings and Plovers are similar in habit, and these come before the Ducks' flight. After having done with the Snipe, &c., you can often add a Duck or two to your bag.

In some winters we have a number of Geese on the fens, but, owing to absence of cover, not many are shot. In 1890 we had some large strings of Geese feeding quite close to the village, and these remained several weeks. I managed to shoot one Bean Goose out of seven; a friend shot three Grey Lags out of twenty-one, besides a fine specimen of the Canada Goose; and my father shot a Bernacle Goose. Specimens of the Brent and Egyptian Geese have also been shot here. I counted eighty-four Grey Lags in one company. Some winters produce Swans. In the year 1894 we had several in the district, and I shot one Whooper; while a specimen of Bewick's Swan was also shot. A friend of mine killed three Whoopers with one shot.

During the severe weather of 1894 we had some fine Smew and Goosanders up the river, besides Sheldrakes, Scaup, Tufted Ducks, Golden-eyes, Crested Grebes, and Coots in numbers, driven from the broads.

There still remain a few Hares on the fens, and some Otters. Several of the ditches teem with fish of late years. Pike have been taken, from nineteen pounds downwards; I captured a Bream in 1896 weighing six pounds and a half, besides four excellent Tench. We had a few years back abundance of Eels, but, owing to steam drainage and constant persecution by Eel-pickers and Herons, they are becoming scarce in the ditches.

THE AUTUMN SONG OF BIRDS.

By Charles A. Witchell.

In a paper on "The Evolution of Bird-Song" which appeared in 'The Zoologist,' 1890, p. 233, and attracted some criticism, I stated that "in autumn the young male Sky Larks, Thrushes, and Blackbirds begin to sing," and Mr. Aplin supports this statement (Zool. 1894, p. 411), saying that on account of the quality of the autumn songs it seems likely that they are produced by young birds of the year. He had never heard a Blackbird sing the autumn song; nor have I; but I have heard the young Blackbird practising a soft-warbled strain in October, in the manner of a young Thrush.

Mr. Aplin classes the Robin and Starling with the Thrush and Hedgesparrow, as commencing to sing in November, or even in October (Zool. 1894, p. 410); but the two former birds begin their autumn song (if such it be) in August (see Zool. 1890, p. 242, also 'Evolution of Bird-Song' [1896], p. 65), or earlier. I have often observed the Robin recommencing its song during the first week in August; and this year, in Kent, numbers began before the middle of July. The Starling I have observed year by year to recommence in the first week in August.

Mr. Aplin found the Willow Wren silent soon after the middle of June (Zool. 1894, p. 411); and so have I for a week or two; but I have heard numbers in song early in July (in Gloucestershire and in Kent), and this year and last dozens could be heard every morning. I have often seen a Willow Wren sing when in heavy moult. This bird is the most persistent singer of all our summer visitors, not ceasing till the middle of August. The Blackcap I have once heard in September.

I can find no distinction between the spring and autumn songs of these birds, except that the Robin makes great use of the call-note (and even of the distress-note) in its morning songs in August (and see "Bird-Songs in Summer," in 'Knowledge,' July, 1897), and that the Starling at the same period rarely utters its love-call in song ('Evolution of Bird-Song,' p. 53). The Robin's song is often employed before combat (*op. cit.* p. 38).

If an autumn singer makes much use of its call-note, we may infer that the song has an exotic origin, but when the call is not used (as in the Starling) it is difficult to see why we should not credit the singer with a sense of pleasure in his surroundings expressed in song; and this is the more reasonable since so many birds have a strong local attachment.

A LIST OF BIRDS OBSERVED IN SHETLAND, MAY AND JUNE, 1897.

By Bernard A. E. Buttress.

The following is a list of the birds which I observed during a three weeks' stay in the Shetland Isles. It will be noticed the number of species given is sixty-three; of these I found the eggs of twenty-seven, while twenty-three of the remainder were undoubtedly nesting.

In spite of the law protecting them, I was sorry to find on Foula some thirty robbed nests of the Bonxie (Great Skua), and only two or three containing eggs. I think I am quite within the mark by putting the number of this fine species trying to breed there at forty pairs.

The occurrence of the Buzzard breeding so far north has not, I think, been for some time noted, although Dr. Saxby, in his book, mentions it as nesting.

From enquiries made, there are at least five nesting places of the White-tailed Eagle still remaining, most of them in quite inaccessible spots.

Saxicola œnanthe. Very numerous everywhere. Eggs found.

Pratincola rubicola. Three pairs on Unst. Nesting.

Phylloscopus trochilus. Saw a single example at Walls.

Troglodytes parvulus. Fair scattering, especially round lochs. Nesting.

Motacilla raii. Approached close to pair at Haroldswick, Unst.

Anthus trivialis. Noticed three pairs in different localities. Nesting.—*A. pratensis.* Very abundant in places. Eggs found. —*A. obscurus.* Quantities on all the shores and cliffs. Nesting.

Chelidon urbica. Many at Foula; also in other parts. Nesting.

Cotyle riparia. Saw several at Symbister, Whalsay.

Passer domesticus. Several pairs around each house. Eggs found.

Acanthis flavirostris. Extremely abundant everywhere. Eggs found.

Emberiza miliaria. A fair scattering in inhabited districts. Nesting.—*E. citrinella.* Two or three pairs at Walls. Seen building.

Sturnus vulgaris. Numerous in most cliffs. Eggs found.

Corvus monedula. Several about Lerwick. Nesting. — *C. corax.* By no means uncommon. Young seen.—*C. corone.* One bird at Vaila Sound.—*C. cornix.* Very numerous. Eggs found.

Alauda arvensis. Abundant on all sides. Eggs found.

Buteo vulgaris. One pair nesting on Unst. Eggs found.

Haliaëtus albicilla. One at Bressay. Nests on Noup of Noss.

Falco peregrinus. Pair at Hermaness, Unst. Nesting.

Phalacrocorax carbo. Fair number round Scalloway. Nesting. —*P. graculus.* Immense numbers on coast. Eggs found.

Sula bassana. Two or three odd birds flying overhead.

Anas boscas. Fair sprinkling about. Young seen.

Fuligula marila. Solitary example on loch near Walls.

Somateria mollissima. Abundant on mainland. Eggs found.

Mergus serrator. Two or three pairs near Walls. Nesting.

Columba livia. Common in all cliffs. Eggs found.

Crex pratensis. Pair on Foula ; one heard at Balta Sound.

Gallinula chloropus. Pair at Walls. Nesting.

Ægialitis hiaticula. Abundant; generally distributed. Nesting.

Charadrius pluvialis. Fairly numerous on the hills. Young found.

Vanellus vulgaris. Many pairs in places. Nesting.

Hæmatopus ostralegus. Abundant on coast. Eggs found.

Gallinago cœlestis. Pairs scattered on moors. Eggs found.

Tringa alpina. One pair on Saxaford Hill.

Totanus hypoleucus. Several round Walls. Nesting. — *T. calidris.* Two pairs at Bridge of Walls.

Numenius arquatus. Commoner on Unst than elsewhere. Eggs found.—*N. phæopus.* Flock of seven at Walls.

Sterna fluviatilis. Fair number on lochs and coasts. — *S. macrura.* Abundant in some districts.

Larus ridibundus. Saw few pairs, but exceedingly local.—*L. canus.* Large colonies on holms in lochs. Eggs found.—*L. argentatus.* By far the commonest Gull. Eggs found.—*L. fuscus.* Generally distributed. Eggs found.—*L. marinus.* Very fair scattering on west coast. Nesting.—*L. glaucus.* Saw one individual in Blue Mull Sound.

Rissa tridactyla. Large colonies in several places. Nesting.

Stercorarius catarrhactes. Small colonies on Foula, mainland, and Unst. Eggs found.—*S. crepidatus.* Breeding in considerable quantities. Eggs found.

Alca torda. Plentiful on suitable cliffs. Eggs found.

Uria troile. Saw many colonies on west coast. Nesting.—*U. grylle.* Scattered almost everywhere on coasts. Eggs found.

Fratercula arctica. Vast numbers on Unst. Eggs found.

Colymbus glacialis. One pair near Clonstel. Eggs found.—*C. septentrionalis.* Several pairs near Walls. Eggs found.

Fulmarus glacialis. Large colony on Foula. Eggs found.

Puffinus anglorum. Colony on Foula; one bird, Unst. Eggs found.

Procellaria pelagica. Saw few at Hermaness. One egg found.

NOTES AND QUERIES.

AVES.

Swallow-tailed Kite in Suffolk.—This British example of *Elanoides furcatus*, recorded by Mr. Butterfield (*ante*, p. 270), was restored by Mr. Bristow, of St. Leonards, some years ago, and the Mr. Travers who shot it told him it was eating a partridge at the time.—G. W. Bradshaw (Hastings).

Alleged Nesting of Montagu's Harrier in Kent.—About the last week in June a young lady, a near neighbour, called to tell me that she had found a nest that she was anxious to identify, bringing with her a feather which had fallen from the bird as it left the nest. I at once recognized the feather as one of the outer tail-feathers of a Harrier, but of which particular species I did not feel sure at first. It certainly was not a Marsh Harrier's, and therefore was either from the Hen Harrier, *Circus cyaneus*, or Montagu's, *C. cinerasceus*. The locality, a marsh, did not accord with the usual breeding places of the Hen Harrier, and on my showing a specimen of a female of each of these species, an objection was raised that the Hen Harrier was too large. A further comparison of the tail-feathers of each left no doubt on my mind that the nest was one of *C. cinerasceus*. The nest was in a dry part of the marsh, and placed in a thick clump of rush and *Carex*. Some of the material, which was also brought for my inspection, consisted of broken pieces of dry reed. The nest was described as very slight in construction. There was one pale bluish-white egg, and this was left in hopes that more would be laid. On a second visit the egg was gone, probably abstracted by a Rook, as no footmark or trodden herbage was visible; nor was the bird seen again. I think there is no doubt whatever that this Harrier (Montagu's) had bred here.—W. Oxenden Hammond (St. Alban's Court, near Wingham, Kent).

Summer Appearance of Wild Geese in Fifeshire.—On July 1st a small flock—about twenty in number—of Wild Geese flew over the links here, going in an easterly direction. Species undetermined, though probably "Pink-footed," which are common here in winter.—A. H. Meiklejohn (St. Andrews, N.B.).

Strange Occurrence of an Albatross in Cambridgeshire. — Mr. Travis, the birdstuffer at Bury St. Edmunds, has lately received in the flesh a bird which is probably new to the European fauna—one of the

Albatross family, of which I am unable to give the specific name. It was caught near Linton, Cambridgeshire, on or about July 1st, and sent to Mr. Travis, with the written order (which I saw) to "stuff this gull." The bird in colour much resembles a Great Black-backed Gull, and measured in the flesh perhaps thirty-four or thirty-six inches, with an expanse of wing Mr. Travis estimated at seven feet. The back and wings are somewhat paler in colour than in *Larus marinus*, but the tail is blackish instead of white; the head, neck, breast, and belly pure white. It arrived in a perfectly fresh condition, and the colour of the feet and legs at once attracted the operator's attention; he described them as "fleshy blue," and this was quite perceptible when I saw the bird, though it had been set up for some ten days. So far as I am aware, only one Albatross of any species has ever reached England alive, and this lived for a short time in the Zoological Gardens some twelve or fourteen years ago; but the beautifully clean plumage of the Cambridgeshire bird quite precludes the possibility of its ever having been in confinement.—JULIAN G. TUCK (Tostock Rectory, West Suffolk).

[This specimen has since been submitted to Mr. Howard Saunders, who has again consulted Mr. O. Salvin, our great authority on the Petrels. Both these experts pronounce the bird to be *Diomedea melanophrys*, the species "which haunted the Færoes for thirty years, and which has also been taken high in the N. Atlantic."—ED.]

Black-throated Diver breeding in Shetland.—During a recent stay in the Shetland Islands, I was assured by a resident that he had several times taken the eggs of *Colymbus arcticus*. I found that he had an extremely good knowledge of ornithology, and was perfectly certain of the birds, having more than once shot them off the nest. He also gave me an undoubted egg taken by himself last year, but had been unsuccessful in observing any this season.—BERNARD A. E. BUTTRESS (Hendon, Middlesex).

Curlew laying Five Eggs.—On June 5th last I discovered a nest of *Numenius arquatus* which contained five eggs. They were all identical in shape, size, and colour, with the exception of one, which was of a slightly greyer tinge and rougher texture. I have not before noticed any mention of more than the usual complement of four eggs being found.—BERNARD A. E. BUTTRESS (Hendon, Middlesex).

Cuckoo's Egg in Nest of Song Thrush.—On June 24th I found an egg of the Cuckoo in a Song Thrush's nest in my garden with three eggs of the owner, the nest being apparently deserted. The Song Thrush's nest is, I believe, very rarely chosen by the Cuckoo for the reception of her egg. On July 8th I had an egg of the Cuckoo from a Hedgesparrow's nest, which was certainly laid by the same Cuckoo, the two eggs being exactly alike, but quite different from any of the others (eighteen or twenty in all) which I have obtained this season.—JULIAN G. TUCK (Tostock Rectory, West Suffolk).

Young Cuckoo in Nest of Twite.—This year I have been led to a moor where one of our provincial birds is abundant—the Mountain Linnet or Twite, *Fringilla flavirostris*—and there I found one busily nursing a young Cuckoo. I believe the incident worthy of notice because the foster-parent in this case is the only species of small birds which remain constantly in the locality, one too exclusively moorland and closely clad with heather for such birds as Chaffinches, Yellowhammers, Larks, &c. It is evident that the nature of the food here provided must differ materially from that which the young ones would receive in more inland or sylvan situations, and it appears to be a question of considerable scientific interest how far the differences of food and natural surroundings may affect these remarkable birds at their different places of nativity, combined with the peculiarities of the various species of birds which are called upon to be their foster-parents. How the young Cuckoo may act as soon as able to provide for itself is also an interesting matter, for in the case under notice the surroundings are those typical for Red Grouse. The young Cuckoo in this case soon ejected all the other occupants of the nest, and became very fierce, making a dart with its bill at one's fingers with all the combativeness of an infuriated male Turkey. The foster-parents displayed their usual vigilance when any one approached the nest, being as much interested in the intruder as they could have been in their own offspring.—WILLIAM WILSON (Alford, Aberdeen, N.B.).

Hawfinches in West Sussex.—These birds have been a great nuisance here this season with their attacks on the garden peas. They seem to be far more numerous of late years; in fact, till ten years ago they might be termed locally rare, but since then scarcely a season passes without some stray individuals turning up.—H. MARMADUKE LANGDALE (Thorneycroft, Compton, Petersfield).

Apparent Summer Appearance of the Shore Lark in Devonshire.—On the 14th inst., at about 4 p.m., I saw near Paignton, Devon, a bird which I think could be no other than *Otocoris alpestris*, the Shore Lark, an adult male in full summer dress. It was perched on a lower bough of a small tree in a meadow not twenty yards from the seashore, the sun full on it, and I had a clear view at ten or twelve yards distance for perhaps nearly a minute. The back was light brown with darker markings, the head with apparently bluish grey on crown, and conspicuous black and white at side; but, excepting a black streak above the eye, I cannot define the exact marking from memory. The bill was short and thick, the throat, breast, and all under parts nearly white, excepting a conspicuous black band horizontally across the breast, with, it seemed to me, nearly square ends. I should think the band was 1½ in. by ½ in. The bird was shortly joined by another, presumably the female, the general colour of which was light brown upper, and very light grey or dusky white under parts, but, so far as I could see, with no dark pectoral band. In endeavouring to approach the birds from the other side by going round a deserted building, I lost sight of them. The meadow on the land side sloped into marshy ground, which, covered with high reeds, &c., extended some distance up a narrow valley. Several people were walking on the sands, and though I was so near the bird it betrayed no shyness. My view of the female was imperfect and brief. Considering that the Shore Lark has hitherto been only known as a winter visitor to the British Isles, this occurrence, if referable to no other species, will, I think, be of great interest.—H. M. Evans, Hon. Curator of Birds (Athenæum, Plymouth).

Alpine Pipit in Carnarvonshire.—The early part of April was marked by cold unsettled weather, with much snow on the mountains and easterly winds approaching a gale on the 3rd and the morning of the 4th. On the afternoon of that day the wind dropped considerably, and I observed a strong immigration of Pied Wagtails and Meadow Pipits on the marshes along the Carnarvonshire side of the river Glaslyn. Among a party of the latter, which were feeding on the side of a muddy pool, I observed one conspicuously larger and lighter coloured than the rest. This bird I watched for some time through a glass at a distance of about thirty yards. On the following morning most of the Wagtails had departed, and the Pipits were less abundant, but the stranger still remained in the same place. It was, however, very wild, and I had some difficulty in shooting it. It proved to be a male of the Alpine Pipit, *Anthus spinoletta*, in nearly complete summer plumage, and is the first occurrence of this species on the west coast. The specimen was exhibited by Mr. Howard Saunders on April 21st at a meeting of the British Ornithologists' Club. — G. H. Caton Haigh (Penrhyndeudraeth, Merionethshire, North Wales).

Quails in Sussex. — A pair of Quails have again taken up their quarters in our valley. Their visit has become almost an annual occurrence, and it is interesting to note that they are generally first detected within an area limited to three small fields.—H. Marmaduke Langdale (Thorneycroft, Compton, Petersfield).

Appearance of Migrants in Aberdeenshire during 1896 and 1897.—The first was an early and the second a late season. Jan. 1st, 1896, about a dozen Tree Sparrows feeding on the fields here along with the common birds, but not seen again; Jan. 2nd, a Magpie, which now seldom appears here. 1896, Lark singing, Feb. 6th; in 1897, Feb. 15th. 1896, Lapwings appeared, Feb. 6th; in 1897, Feb. 16th. 1896, Curlew appeared, Feb. 10th; in 1897, Feb. 20th. 1896, Grey and White Wagtails, March 12th; in 1897, March 8th. 1897, Yellow Wagtail, March 28th; Ring Ouzel, April 5th; Cuckoo heard, April 26th. These three birds were earlier than usual. Dunlin Sandpiper, about April 20th. Swallows, more numerous than usual and earlier, appeared May 4th. We may also notice that the Corncrake nested here in 1896, and has not been known to do so for many years. Lapwings, Ring Ouzels, and Swallows are more numerous than formerly, and recent protective legislation may be making itself felt in that direction. The Lapwings' eggs were in much request, and the Ring Ouzel was much persecuted on account of its predaceous habits upon fruit, though I believe that it does more good than harm by eating slugs, caterpillars, and other insect-pests in gardens. We have seen two avian combats —one between Grouse and Hooded Crows—when the latter attempted to interfere with the nesting operations of the former. Grouse show marked powers of organization in such cases, rallying to assist each other, and raising a peculiar noise on such occasions. The second fight, of a less serious nature, was between Lapwings and Partridges. A number of the latter were introduced here in 1896, their eggs being hatched and young reared under barn-door hens. These birds have spread, and their requirements necessitating more ground than formerly have brought about the strife with Lapwings. The Partridges are bold, and resist successfully the onslaughts of the Lapwings, which are made on wing, and on the Partridges while moving on the ground. Redbreasts were earlier about farm-buildings in 1896, those seen previously being in August. In 1896 a flock of Geese passed northwards about March 20th, and in 1897 about a month later. On Sept. 30th, 1896, about thirty passed southwards. It is rarer to notice them here in the autumn than in spring.—WILLIAM WILSON (Alford, Aberdeen, N.B.).

Inherited Habit in Birds.—I have recently had an additional and very striking proof of the fact that birds build their nests in obedience to inherited law and not by imitation. I considered the instances already mentioned respecting my Canaries quite good enough, but the case which I now have to record is, if possible, even more conclusive. To most scientific ornithologists the little bird familiar to aviculturists as the Bengalee will be almost unknown; it is, however, abundantly bred and regularly exported by the Japanese, and has been produced by them probably for many centuries. The origin of Bengalees is not known for certain, some breeders believing that they were originally derived from the Sharp-tailed Finch, *Uroloncha acuticauda*, others from the Striated Finch, *U. striata*; whilst Mr. Abrahams holds that they are the result of a cross between the latter and the Indian Silver-bill, *Aidemosyne malabarica*, a belief which, from a study of their variable markings and a consideration of their feeble reproductive powers, I am strongly inclined to support. How long ago Bengalees were first produced it is impossible to say, for the Japs certainly kept and reared birds long before aviculture was thought of in Europe; but it is certain that, from the first development of this pseudo-species, small cages only were used in which to breed them. A year or two ago, finding that a large consignment of these birds had arrived in London, I purchased some of each of the three varieties, and kept them in three separate flight-cages, supplying them with Hartz Canary cages hung high up, in which to build. From the "pure-bred" Bengalees I reared only two or three young in as many years, but from Bengalee and Striated Finch I reared five in one season, all of which are still living. This year, finding that none of my Bengalees were doing any good, I turned out the whole of them into one of my largest aviaries. Here they at first took possession of Hartz Canary cages as before, and began to build in the usual slovenly fashion; they were, however, constantly disturbed by other small finches desirous of occupying the same receptacles. One day in July I collected a large handful of flowering grasses—a very favourite food with all small finches—and flung it into the aviary, where it was immediately covered by a crowd of little birds. The Bengalees, however, as if recognizing this as the natural building material of their ancestors, flew off with it stem by stem to a small bush, where they constructed a neatly domed typical Mannikin's nest, with the usual circular opening in front. In this nest one egg was deposited, and then some other birds began to pull the domed portion to pieces for their own use; nevertheless these little Mannikins persevered, repairing the nest whenever fresh grasses were supplied to them. Now I think all candid readers must admit that when birds which were reared in a small cage within a cage, and whose ancestors were so reared for hundreds (perhaps thousands) of years, can at any given moment exactly reproduce the typical nest of their remote wild ancestors without any model whatever to guide them, it is absolutely certain that the laws regulating their method of building are inherent in their natures, and not acquired. The aviculturist has proofs before him almost every day that birds do not build by imitation, for wild-caught birds, unless turned out into enormous garden aviaries, generally depart at once from their usual habits, building in boxes and cages in preference to bushes and twigs. On the other hand, Canaries and Bengalees, having for centuries been bred in cages, are stimulated by the comparative freedom of a large aviary, and the rebound causes them to reproduce the homes of their wild ancestors. At any rate, I see no other reason why they should ever return to their natural method.—A. G. Butler (124, Beckenham Road, Beckenham, Kent).

AMPHIBIA.

Frog attacked by Weasel, and Toad by Hedgehog.—I was much interested in Mr. Meiklejohn's account of the above, never having had the good fortune to observe the same; but I have twice come across a Weasel devouring a Frog, the last occasion being two or three years ago, in the month of September. I was out Partridge shooting, and on walking down a field to join the other guns, I heard a commotion in a high hawthorn fence. On creeping quietly up, I saw a Weasel almost at the top of the fence, which was about twelve feet high, tearing a Frog to pieces. I watched it unobserved for about half a minute; then it caught sight of me, let drop the Frog, and bolted down into the ditch. This was a large Weasel, and therefore presumably a male. My late father-in-law, some years ago, when going down a hay-field of his in Lincolnshire, heard a curious noise going on, for which he could not account, on the other side of the fence; he quietly got over, and found a Frog held by the hind leg by a Mouse, but, not being a naturalist, he was unable to tell me what species of Mouse it was. In addition to those animals mentioned in the editorial note which attack the Toad, I can add another, *viz.* the Hedgehog. At my old home in my father's lifetime we had a large walled-in orchard adjoining the garden, where we kept various reptiles, amphibia, birds, and mammals, and amongst the latter were a score of Hedgehogs. We had a lot of common Toads, common Frogs, and about a score each of Natterjack Toads and Edible Frogs, the latter of which I had brought from the Continent. We were considerably annoyed to find dead specimens of all four species lying about, all of them having merely the thighs torn and eaten. A strict look-out was kept for the culprit, and one day, a message being brought that the gardener wished to see me at once, I hurried down, and found that he had caught *Erinaceus europæus* in flagrante delicto, just finishing off one of my Natterjack Toads.—OXLEY GRABHAM (Flaxton, York).

[The editorial note to which Mr. Oxley Grabham refers relates principally to the carnivorous mammals which have been known to attack the Frog, and to these may be added the domestic Cat, as recorded in 'The Zoologist' for 1865, p. 9814. A writer in 'Loudon's Mag. Nat. Hist.' vol. iv. (1831), p. 557, states that he had "seen the mouths of Dogs swelled fearfully from worrying Toads."—ED.]

PISCES.

Strange Occurrence at Durban.—It is reported from Natal that in the early part of June last, at the port of Durban, hundreds of big heavy Salmon were driven ashore on the back beach, it was supposed by Sharks, and subsequently the fish were conveyed to town by the trolly-load. There are, as is well known, no Salmon in the Indian Ocean, and it seemed scarcely probable that our old friend the so-called "Cape Salmon," *Otolithus æquidens*, could be the fish referred to. I therefore sought, and not in vain, the opinion of Mr. G. A. Boulenger, of the British Museum, on the subject, who has informed me that the fish was probably a Herring, *Chanos salmoneus*. Dr. Günther describes this species as "extremely common; it enters fresh waters, and exceeds a length of four feet; its flesh is highly esteemed."

INSECTA.

The Common Cockroach.—A few days ago my daughter brought me a full-grown Cockroach, *Periplaneta orientalis*, of a pure white colour, excepting the eyes; it was even whiter than the white satin moth, but before I had time to kill it the colour had changed to a light brown. It was found among some papers in a closet.—James Sutton (33, Western Hill, Durham).

[Immediately after the moulting of the Cockroach its colour is of a creamy white; but after a few hours, and the influence of air and light, it acquires the depth of coloration characteristic of its age. Before reaching the adult form it changes the skin an uncertain number of times—not less than five, probably as many as seven. A good account of the Common Cockroach may be found in E. A. Butler's 'Our Household Insects.'—Ed.]

NOTICES OF NEW BOOKS.

The Migration of Birds: an Attempt to reduce Avine Season-flight to Law. By Charles Dixon. Amended Edition. Horace Cox. 1897.

This is a very interesting volume on a question of transcendent interest to ornithologists, to whom the problem of the migration of birds is as difficult of solution as is that of mimicry by entomologists. Avine migration as treated by Mr. Dixon derives a freshness by the perfectly original—almost revolutionary—method by which it is sought to be explained. The old teachings as to the part played by the important factors of change of climate and scarcity of food, and the theory of Polar dispersal, are quite discarded, and the author's main contention is that "the grand centre of Life's dispersal across the globe is an equatorial one, and that, from those regions where the greatest stability of climate and the most favourable conditions for the development of animal and vegetable forms are to be found, Life in two grand streams has flowed towards the poles." Glacial epochs are considered as exterminating influences and not as dispersing agencies, and on their cessation the areas over which they have exercised their icy and lifeless sway are again colonized from Nature's headquarters in the equatorial regions. Then again the old theory of avine hibernation, so generally considered as belonging to the limbo of forgotten suggestions, is not only revived, but its scanty evidence also amply discussed, and the conclusion stated that—"Strange, nay almost incredible as avine hibernation is, however, it must always be remembered that the evidence against it is purely negative; and that, although it has not yet been sufficiently established to satisfy the sceptical science of to-day, it has never been refuted."

With all the painstaking investigation now being pursued on the subject of migration by enthusiastic ornithologists, the industrious tabulation of their facts, and the critical collocation to which these facts are subjected, we still feel that much remains unrecorded owing to the difficulties of observation. Mr. Dixon forcibly expresses the opinion that migration is largely "a nocturnal drama of the air," and that "a captive balloon floated above some spot where migration is notoriously prevalent, as for instance at Spurn Point on the Yorkshire coast, in the Wash, on the Sussex downs, or, better still, over Heligoland, fitted with a powerful electric search light and various meteorological instruments, would result in priceless information concerning the annual movements of birds is absolutely certain."

Mr. Dixon's hypothesis is that both the northern and southern regions receive their migrants from the equatorial belts, but that "no migratory bird normally crosses the tropics to breed or to winter, in either hemisphere"; and as subsequently expressed, "one set of individuals passing to the Arctic tundras, the other set to Antarctic breeding grounds—from an equatorial winter centre." To make the author's proposition clear, and to accentuate his argument, we must give another quotation:—"We may conclude that the migration of birds in autumn is neither due to a fall of temperature nor a failure of food, although to the casual observer this invariably appears to be the case; but is initiated by a nostalgic impulse to return to certain centres which are in the majority, if not in all, cases associated with that gregarious instinct which in most species is only subservient to reproduction, and in not a few others is equally as strongly developed, as is proved by so many migratory birds breeding in societies and displaying social tendencies right through the summer."

It will be thus seen that the volume is surcharged with new matter, that we fain hope will meet with the candid consideration of naturalists, though perhaps with small chance of general acceptance among ornithologists. In fact, our author almost anticipates "being 'handled without gloves' by some mud-and-torpor-despising bruiser critic for my heresy." This is surely unlikely, for the book is full of facts as well as suggestions, again proves how the new method of enquiry has invaded ornithology, and is written throughout with a felicity of language and sustained advocacy which affords every weapon for the theory except convincement, though this is all that can be expected in a general way when new views are first promulgated.

'Cambridge Natural History.' Vol. ii. *Worms, Rotifers, and Polyzoa.* Macmillan & Co., Limited. 1896.

THIS third volume of the Cambridge Natural History—vols. iii. and v. having previously appeared—fully maintains the interest and character of the series. No fewer than seven contributors have assisted in the publication, which renders the task of an adequate notice somewhat difficult in our limited space.

"Flatworms and Mesozoa" have been entrusted to the pen of Mr. F. W. Gamble. Besides a fully biological treatment and a system of classification, the general zoological reader will find many of those natural history narratives to which the pages of this Journal are always open. We may instance as an example a reference to the Liver-fluke of the sheep, *Distomum* (*Fasciola*) *hepaticum*, which produces the disastrous disease liver-rot. This "has a distribution as wide as that of a small water-snail, *Limnæa truncatula*, the connection between the two being, as Thomas and Leuckart discovered, that this Snail is the intermediate host in which the earlier larval, sporocyst, and redia stages are passed through, and a vast number of immature flukes (Cercariæ) are developed. These leave the Snail and encyst upon grass, where they are eaten by the sheep. Over the whole of Europe, Northern Asia, Abyssinia, and North Africa, the Canaries, and the Faroes, the Fluke and the Snail are known to occur, and recently the former has been found in Australia and the Sandwich Islands, where a Snail, apparently a variety of *Limnæa truncatula*, is also found."

The Nemertines are treated by Miss L. Sheldon. These worms are common on the British coasts, and about forty species have been recorded from this area. They "are often very diversely and brilliantly coloured, the hues most commonly found being white, yellow, green, deep purple, and various shades of red and pink." There are also land and freshwater forms, in the last of which there are certainly many new genera and species to be discovered. Altogether a zoologist in want of a speciality might well take up the Nemertine worms, and he will find Miss Sheldon an excellent "coach."

Mr. A. E. Shipley, one of the editors of the Series, writes on "Threadworms and Sagitta." If these little animals are not the most interesting objects of study to the general zoologist, they are at least not unimportant to man and his surroundings. Minute Nematodes abound in moist soil around the roots of plants, &c. In animal parasites we have the round worm, *Ascaris lumbricoides*, which inhabits the alimentary canal of man; *A. mystax*, found in the cat and dog, and *A. megalocephala* in the horse and ox. Parasitic in plants, they cause the formation of galls and other pathological growths; while the "Vinegar Eel," *Anguillula aceti*, "which occurs so often in weak vinegar, is another familiar example of this group." No fewer than "twenty-two species have been described as parasitic in man," and hence the *cui bono* which has often irritated so many amiable naturalists can scarcely be applied with effect to the specialist who investigates the life-histories of these unbidden guests.

Rotifers are under the charge of Mr. Marcus Hartog. These microscopic animals always recall to the mind of the writer that, in conjunction with Hudson, his old correspondent, P. H. Gosse, so aptly designated by Charles Kingsley as "that most pious and most learned naturalist," passed the last years of a long zoological vigil in their Monograph. Gosse was undoubtedly a true zoologist, but there is a danger lest he be principally remembered as the author of that bizarre publication 'Omphalos.' Mr. Hartog bears witness to the value of the 'Monograph,' and may be said to supplement it by giving the true biological details of the group. It is surprising how many interesting details may be studied in the life-histories of Rotifers. "Almost any organic infusions freely exposed to the open air will yield Ploima shortly after the active putrefaction is completed. The finer water weeds yield most of the beautiful tubicolous forms. A whole group of species and genera are quasi-pelagic in fresh and salt water, constituting a large proportion of the 'plankton' or floating life near the surface; and some of them are found in deep water, or in the depths of the lakes." Others again are parasitic.

Mr. W. Blaxland Benham has contributed a very useful treatise on the Polychaet worms. Most marine anglers are acquainted with that well-known and common bait the Lug-worm, *Arenicola marina*, amongst other Polychaet lures, which form part of the group of "marine worms, whose bodies are usually elongated and cylindrical; they either lead a free life swimming in the open sea or crawling along the bottom, or they pass their life in burrows or definite tubes of various kinds." Amongst other peculiarities, some species are polymorphic. "Claparède was the first to show that *Nereis dumerilii* may occur in at least five different mature forms; these differ from one another in size, colour, mode of life, character of the eggs, &c." Fission and gemmation and the regeneration of lost parts are not the least uninteresting details of these in general beautifully-coloured worms, which vie in hue with butterflies, but whose tints are far more difficult to preserve.

Earthworms and Leeches have become so associated with the name of Mr. Beddard, and his 'Monograph of Oligochæta' is so widely known and generally consulted, that we might perhaps confine our remarks by saying that this portion of the volume is from his pen, and those of our readers who have recently read the "Earthworm Studies" which are appearing in our pages, will do well to consult this memoir also. The classification of Leeches is evidently attended with some difficulty. As no fewer than sixty-four colour varieties of the common *Hirudo medicinalis* are said to exist, "it is not wonderful that the labours of some systematists have been severe, and have provoked much criticism and alteration on the part of others." We are not therefore surprised at the remark of Sir J. Dalyell, which is quoted in a footnote: "It does not appear that the history of the Leech has advanced in proportion to the number of *literati* who have rendered it the subject of discussion."

Mr. Shipley has also written the account of "Gephyrea and Phoronis." The Gephyrea are exclusively marine, and have been the subject of considerable taxonomic discussion. They were formerly associated with the Echinodermata; Lamarck placed them near the Holothurians; and Cuvier "also assigned them a position amongst the Echinoderms." Quatrefages regarded these animals "as bridging the gulf between the Worms and the Echinoderms." The Sipunculids have a diet which seems to consist almost entirely of sand, and, as Mr. Shipley observes, "The enormous amount of sand and mud which passes through the bodies of the Sipunculids shows that they must take a considerable part in modifying the mineral substances which form the bottom of the sea. Just as Earthworms, as shown by

Darwin, play a considerable *rôle* in the formation of soil, so must these animals, in conjunction with Echinids and Holothurians, effect considerable modifications in the sand and mud which pass through their bodies."

The concluding section is devoted to the Polyzoa, and is from the pen of Mr. S. F. Harmer. The Polyzoa may be said to have existed without a history till the beginning of the present century. "Originally passed over as seaweeds, their real nature was established in connection with the discovery of the animal nature of corals." Even now the echoes of the controversy which raged as to whether Thompson's name of Polyzoa or Ehrenberg's term Bryozoa should be used are sometimes faintly perceptible. The first is employed by the majority of English writers, while the second is almost universally used by all continental authors. Many of the marine forms have a very wide distribution, Mr. Hincks having described several species as occurring from Norway to New Zealand. We are glad to see that Mr. Harmer still describes Mr. Hincks's 'History of the British Marine Polyzoa' as "invaluable," and his excellent contribution will, we feel sure, if studied, lead many more zoologists to study these somewhat neglected creatures, who are undoubtedly as interesting as "birds, beasts, or fishes."

In conclusion, we can only generally praise a most welcome addition to zoological literature, a volume we do not value because it only contains what is new, or is without any views that may be controverted, but because it affords the life-histories of animals whose study and observation are little in vogue, while the information is imparted by specialists who have pursued the modern biological method.

L'Année Biologique. Première Année, 1895. Paris: Schleicher Frères. 1897.

This is a worthy supplement to our own 'Zoological Record,' and all naturalists who seek to study the mysteries of the life, as well as the form, habits, and distribution of species will place the volumes of this series by the side of those we have mentioned, and which we so well thumb. 'L'Année Biologique' is under the general direction of Prof. Yves Delage, assisted by a strong staff, amongst the names of whom we notice enrolled our own countrymen, G. Mann of Oxford, J. A. Thomson of Edinburgh, and B. Windle of Birmingham. Each reference is in the form of a lengthy abstract and signed by its compiler, and the whole subject is distributed under sections which bear the names of the familiar studies which are now reconstituting the aims of Zoology. As we glance through these *résumés* of thought and work going on as it were beneath the surface of our own arena, the question arises whether we do not now only constitute the remnant of the "Old Guard," and that the Zoology of the future will be an edifice of which our hardly wrought bricks will form but the foundation. We welcome the appearance of the first volume of this excellent contribution to a knowledge of current Biology, and trust the work may annually increase its usefulness.

Traité de Zoologie. Publié sous la direction de Raphael Blanchard. Fas. XI. Némertiens, par Louis Joubin. Fas. XVI. Mollusques, par Paul Pelseneer. Paris: Rueff et Cie. 1897.

Zoology, once a playmate for the curious, a reference for the collector, and the strength of a popular museum, is fast becoming one of the most serious of sciences. The anatomy and physiology of animals is too often neglected; in fact, one sometimes remembers the jest made by Edward Forbes and related by Huxley, to the effect that the pure systematic zoologist was unaware that the stuffed skins he named and arranged ever had contained anything but straw. It is perhaps better, however, that we have specialists who devote themselves to each branch of our study, while our pages still remain that "home for destitute truth" relating to the natural history of living animals.

The Nemertine worms (*Nemertinea*) are described by Prof. Louis Joubin. In writing the word "described" we are not referring to specific diagnosis, but to the description of the worms themselves, their exterior characteristics, anatomy, physiology, and life-history. The principles of their zoological classification are well set out, followed by an "Index bibliographique" and a very full general index. The illustrations are numerous and, we may add, excellent, and, with the recent contribution on the same subject in the Cambridge Natural History, we feel that these lowly organized creatures are at length receiving adequate treatment.

Dr. Paul Pelseneer, in his necessarily larger contribution on the Mollusca, has pursued a similar treatment of his subject, which he has divided into the sections Amphineura, Gastropoda Scaphopoda, Lamellibranchia, and Cephalopoda. It has often been asserted that there were conchologists who devoted their whole study to the outside covering or shell of the species which they collected, and should such specialists find time or inclination to investigate the nature of the living animal itself, Dr. Pelseneer will at least prove a not inefficient guide.

Practical Taxidermy: a Manual of Instruction to the Amateur in Collecting, Preserving, and setting up Natural History Specimens of all kinds, &c. By MONTAGU BROWNE, F.Z.S., &c. Second Edition. L. Upcott Gill.

TAXIDERMY, in some form or other, if not an ancient art, was at least an early practice. Besides the Egyptian mode of embalming to which Mr. Browne refers, we are told by Gibbon, that according "to the voice of history," on the death of the Roman Valerian, Sapor's illustrious prisoner, "his skin, stuffed with straw, and formed into the likeness of a human figure, was preserved for ages in the most celebrated temple of Persia." Animal effigies, for they could be called by no other name, must have had considerable influence in inculcating an early knowledge of Zoology, as well as the living wild animals imported for the purposes of imperial holidays. A Zoology without the practice of Taxidermy or animal preservation, is the science independent of museums and private collections, and valuable as field observations are, and recorded perhaps nowhere with greater alacrity than in the pages of this Journal, students still require both the living and the dead. Moreover, the love of Zoology is not always combined with the qualifications of Midas, and a knowledge of the art is necessary for the collector with a moderate income at home, as well as for the travelling naturalist abroad. Taxidermy is *now an art*, a thing of joy to the naturalist as he examines those beautiful cases of British Birds in our National

Collection, and many who can spare the cash and not the time or energy, will gladly rely on professional assistance. As our author remarks, there is really no reason for "the narrow way in which most professional taxidermists bolster up their art in a secret and entirely unnecessary manner—unnecessary because no amateur can, but by the severest application, possibly compete with the experience of the technical or professional worker."

We cannot pretend to criticise a book which demands a special and technical knowledge. Mr. Browne is an advocate of non-arsenical preservatives, which perhaps prejudice alone may have prevented our having personally used. There are also to be found the recipes for numerous preservative fluids both for fish and reptiles, some well known and others apparently novel. Besides these, we are told how to fight and overcome museum pests, the material with which to mend broken specimens, how to clean skins and prepare microscopic objects, and to fit up cases and cabinets; of course the directions to skin and set up mammals, birds, reptiles, fishes, &c., are fully detailed, and the volume concludes with advice on museum arrangement. We have found so many useful hints in the perusal of this manual that we now regard it as a friend on the book-shelf to be often consulted, for there are few zoologists who are not collectors, and few collections that do not sometimes give anxiety. This is a subject which might well find a place in our "Notes and Queries."

EDITORIAL GLEANINGS.

We are glad to see by the 'Journal of the Anthropological Institute' that the endeavour to establish an Ethnographical Bureau for the British Empire has not been abandoned. As the President observed:—"The splendid precedent of the Bureau of Ethnology attached to the Smithsonian Institute, confined as it practically is to the races which formerly existed on the American Continent, shows what might be done on the much wider field of enquiry that we possess, if only the public spirit of the nation and its rulers could be awakened to the priceless value, not to say the absolute necessity, of the enterprise." Prof. Macalister had previously remarked:—"It is little short of a national disgrace that in the largest empire of the world, within whose bounds there are nearly as many separate peoples and tribes and kindreds and tongues as in all the other nations put together, there is no Imperial Department having for its functions to collect and classify the facts of the physical, psychical, and ethical history of our fellow subjects."

The Ethnographic Survey of the British Association has continued its useful work. The collection of physical observations from various parts of the United Kingdom is steadily growing, and at the same time collections of folk-lore are being made.

In travelling on the African Continent, or in reading the narratives of other travellers, we meet with much difficulty in properly identifying the various species of Zebras which still roam, often in sadly diminished numbers, that interesting region. Mr. R. J. Pocock, of the British Museum, has recently (Ann. & Mag. Nat. Hist.) thoroughly examined the problem, and given us a revised list based on the studies he has made. He recognizes four species—*Equus zebra*, Linn., *E. quagga*, Gmelin, *E. burchelli*, Gray, and *E. grevyi*, Oustalet. To *E. burchelli* he adds six subspecies, thus making seven forms or local races—*antiquorum*, H. Smith, *chapmanni*, Layard, *wahlbergi*, nov., *selousii*, nov., *crawshayi*, de Winton, and *grantii*, de Winton. Of these *E. zebra*, though formerly abundant on the mountainous districts of Cape Colony, "is now verging on extinction," while the Quagga is generally admitted as extinct.

According to the Pretoria 'Press,' within the last two years the Hippopotamus has almost entirely disappeared from the Lower Shire River, and is very seldom seen now in the Upper Shire. It is only a few years ago that these animals rendered navigation by boat positively dangerous on the Shire between Katunga and Chiromo, and there have been many boats upset and much cargo lost through their attacks. Crocodiles seem to be as numerous as ever, and in all parts of the river carry off numbers of people annually.

A CORRESPONDENT in Natal draws the attention of the 'Daily Chronicle' to a point interesting to naturalists. In a lagoon of the river Umgeni, six miles from Durban, there remain, he says, a number of Hippopotami, which, saving a few in Zululand, are the last "Sea-cows" left in British South Africa. They are preserved by a game law of 1891 as "royal game," and permission to shoot them can only be obtained from the Natal Government between May 1st and August 15th. But the herd devastates the plantations of Messrs. Townsend Brothers, who have asked the Government to put up a fence which will cost £740. This the Government declines to do. It is certainly hard that the Hippos should be preserved at the cost of a private firm, and if the Natal Ministry is anxious, as it declares, to preserve them, the cost of a substantial fence, or in the alternative the employment of watchmen, ought not to stand in the way. A herd of Hippos ranging even for one night in a plantation would damage hundreds of pounds' worth, and destroy a hundred times as much as they eat, and if a fence is required for the preserve it ought not to be difficult to get the money voted for the enclosure of a permanent breeding ground. The correspondent, however, raises a larger question. He "advocates the formation on the high veld of a permanent enclosed game preserve, in which might be kept some specimens of the Giraffe and other of the rare and rapidly disappearing South African fauna. In four or five, or at the most ten years, it will be too late to attempt the formation of such a park, as there will be none of the larger game left, and as the country gets settled, land will become more difficult of acquirement. Unless something is done quickly, where will South African animals be got for our menageries and zoological gardens?"

The Durban correspondent of 'South Africa' is quite hopeful on this matter. He writes:—"As this is near the election, the fencing will be undertaken, and the ministry will remain in office!"

'DIE NATUR' records that Prof. Rudolf Leuckart, the renowned German zoologist, has been made a Knight of the Order pour le Mérite in Science and Art by the German Emperor.

In the list of the recent Jubilee honours we were glad to see the name of our contributor, Mr. E. W. Brabrook, as a recipient of the distinction of the "C. B."

The Zoological Society are exhibiting in their Gardens a specimen of *Testudo daudini*, which is said to be the largest land Tortoise now living, and which has been deposited there by the Hon. Walter Rothschild. It was originally obtained from the Aldabra Islands, in the Indian Ocean, but has been a captive elsewhere for over 150 years. The daily papers have not lost so fine a subject for comment, and extraordinary ages have been invented for the animal, which has doubtless attained a considerable but uncertain longevity. Its total length is about 4 ft. 7 in., its breadth 2 ft. 10 in.; while its present weight, about 5 cwt., may be taken as capable of considerable increase by generous and judicious feeding.

We learn from Durban that the largest Turtle known on the coasts of Natal has recently been brought ashore at Port Shepstone, and which when alive weighed upwards of 700 lbs. Its shell, which measured 3 ft. 9 in. by 3 ft. 6 in., has been polished, ornamented with a gold shield and suitable inscription, and presented by its owner, Mr. Osler, to President Krüger of the Transvaal Republic. This gift will undoubtedly serve to localize and preserve the specimen.

A giant Salamander of Japan, that had lived for thirty-seven years in the Jardin des Plantes, died on June 15th, having a length of 1·30 metre, and a weight of 24 kilograms.—('Natural Science.')

An egg of the Great Auk was sold to Mr. Middlebrook at Stevens's Sale Rooms, on July 27th, for the sum of 160 guineas. This egg was sold in the same place on June 25th, 1895, for 165 guineas. Its description, as given in the sale catalogue, was as follows:—"Taken in Iceland about 1830, by a shipowner of St. Malo, who bequeathed it to the Comte Raoul de Beracé, whose collection was purchased by the Baron d'Hamonville. This specimen (slightly cracked), which, in colouring and texture, is unique, was figured in the Memoirs of the Société Zoologique de France in 1888, plate 6, fig. c, and additional notes on its history appeared in the Bulletin of the Société in 1891."

The Editor would be glad to receive information as to the remaining eggs of this bird contained in British collections, so that a complete list of the same may be published.

Mr. R. J. Ussher has recently discovered bones of the Great Auk in Co. Waterford. In a communication to the 'Irish Naturalist,' Mr. Ussher states he has investigated some kitchen-middens on the Waterford coast, from which he not only obtained bones or horns of Ox, Goat, Horse, Pig, Red-deer, and domestic Fowl, but also an abundance of shells of Oysters, Cockles, Mussels, and Limpets, with many pot-boilers or burned stones. But the great find consisted of some birds' bones, which were submitted to Prof. Newton, who examined them with the great assistance of Dr. Gadow. Prof. Newton, writing to Mr. Ussher, observes:—"I congratulate you on possessing remains of at least two Great Auks, for you will notice that the two coracoids are of the same side. . . . Read in the light of these relics, Mr. Davis's famous bird of 1834 must have been visiting the home of its forefathers."

On a subsequent visit Mr. Ussher again found bones, which Dr. Gadow determined as containing a humerus, tibia, and metatarsus of Great Auk. Remains of this bird have already been recorded from Co. Antrim, and the present discovery shows that the range of the Great Auk extended in Ireland nearly as far south as 52° N. latitude.

In the Bulletin de la Soc. Zool. de France, Mai–Juin, 1897, Mons. Ch. van Kemper gives details of colour variation, hybridity, and "anomalies" in birds and mammals in his own collection. Ornithologists will find much to interest them in the records of the colour variation of the thirty-seven birds enumerated, while several British varieties will be seen to have found a home in this collection.

Canon Ingram, rector of St. Margaret, Lothbury, writing to the 'City Press' in July, says:—"A pair of Wood-Pigeons have built their nest in one of the trees in the little garden-churchyard in front of my rectory house in Ironmonger Lane, and the young birds were hatched last Thursday. The tree is within a hundred yards of historic Cheapside, the busiest thoroughfare probably in London; at about the same distance from the Bank of England; and within, I suppose, two hundred yards as the crow flies of the Mansion House. I should imagine that there is no previous record in the modern history of London of a pair of wild birds building their nest and rearing their young so near the very heart of the City."

'The House Sparrow,' *Passer domesticus*, is the title of a leaflet, written by Miss Ormerod and Mr. Tegetmeier, which has just appeared. In it is condensed much of the authentic information which has been given by some of our best observers as to the destructive nature of this bird. For instance, from Mr. J. H. Gurney's report on the monthly food of the Sparrow, and which details the contents of the stomachs of *six hundred and ninety-four* birds, conviction is surely obtained. As Mr. Gurney remarks, "It may be said that about 75 per cent. of an *adult Sparrow's* food during its life is corn of some kind." In their summary the authors draw up this further indictment:—

"In the present space it is impossible to enter fully on this important national matter, but still we find, in addition to what all concerned know too well already of the direct and obvious losses from Sparrow marauding, that there is evidence of the injurious extent to which they drive off other birds, as the Swallows and Martins, which are much more helpful on account of their being wholly insectivorous; also that, so far from the Sparrow's food being wholly of insects at any time of the year, even in the young Sparrows only half has been found to be composed of insects; and of the food of the adults, it was found from examination that in a large proportion of instances no insects at all were present, and of these many were of kinds that are helpful to us or harmless. Also it is well on record that there are many kinds of birds which help us greatly by devouring insects, and that where Sparrows have been systematically destroyed for a long course of years all have fared better for their absence; and also attention should be drawn to the enormous powers of increase of this bird, which under not only protection, but to some extent absolute fostering, raises its numbers so disproportionately as to destroy the natural balance."

M. Cabalzar, a French aeronaut, made a balloon ascent at Annecy on the occasion of the dedication of a monument to Carnot, says a despatch to the 'Petit Journal.' The town is separated by a lake from a mountain 1800 mètres in height, which is the home of many Eagles. While the balloon was descending an enormous Eagle swooped down on it and lit on the edge of the balloon near where the ropes that supported the car were attached. The Eagle's weight made the bag sway violently, and M. Cabalzar feared an accident. The Eagle hung on, staring at the aeronaut, until the balloon was within 200 yards of the earth, when the shouts of the peasants drove him away.—('Westminster Gazette.')

We learn from the 'Wombat,' published at Geelong, Victoria, Australia, that "the bonus offered by the Government for the destruction of Cormorants has been discontinued, owing to the amount voted last year for this purpose having been exhausted." On the other hand, it was intended to issue a proclamation on March 24th, to change the close season for the Emu, and to protect this bird, along with the Grey and the Red Kangaroos, from January 1st to December 31st.

"On Yorke's Peninsula," writes the 'Adelaide Observer,' "those who have gardens and vineyards almost worship the Little Plover, and woe betide the man who shoots one in the vicinity of Stansbury. The 'sportsman's enemy,' as it is called, from the alarmist cry it utters when it sees any one creeping on game, is encouraged to visit the gardens on Southern Yorke's Peninsula, and appreciating its position of safety the Plover runs about in search of insects. The birds have been found exceedingly valuable in ridding the vines of the grub which does such an amount of damage, especially to young vineyards. The amount of grubs one Plover can consume is simply surprising."

The 'Avicultural Magazine,' the Journal of the Avicultural Society, has now reached its third volume and its thirty-fourth number. The August issue contains two coloured plates drawn by Mr. Frohawk of the Blue-winged Green Honeysucker or Bulbul, *Chloropsis hardwickii*, and the Diamond Dove, *Geopelia cuneata*. Both these birds seem desirable inmates of the aviary, or, to speak more correctly, do well in captivity; and details are given as to their proper housing and food. This publication seems a marvel in cheapness. The subscription to the Avicultural Society is 5s. per annum; the entrance fee is 2s. 6d.; and the magazine is sent free to members monthly.

We are glad to see that Economic Entomology is now not neglected either at home or abroad. Of the 'Indian Museum Notes,' published at Calcutta, part 2 of vol. iv. has just reached our hands. From this we learn that a collection has been prepared for exhibition in the Indian Museum, with a view to illustrate the life-histories of some of the more important "economic" insects, both injurious and useful, in the various stages of their development.

Among reprints is one of a report by Barrows and Schwarz (Bulletin No. 6, U.S. Depart. Agricult. Div. Ornithol. and Mamm. 1895) on "The Common Crow of the United States as an enemy to Insects." The stomachs of 909 Crows were examined, and the insect-material found in these was almost 24 per cent,

We have also received No. 2 of 'Contributions from the Department of Zoology and Entomology,' Iowa State College of Agriculture and Mechanic Arts. This is written by Herbert Osborn and E. D. Ball, and is chiefly devoted to contributions to the Hemipterous Fauna of Iowa, and principally to the Homopterous Family Jassidæ, "which swarm, often by millions to the acre, upon various species of grasses."

The Committee for Protection of Insects in danger of Extermination, of which Mr. Chas. G. Barrett is Hon. Sec., and to whom we are indebted for the following information, recently held a meeting, and resolved that the following species of Lepidoptera, being local species in danger of extermination, be more particularly recommended for protection:—

Papilio machaon, L.
Leucophasia sinapis, L.
Pieris cratægi, L.
Melitæa athalia, Esp.
M. cinxia, L.
Apatura iris, L.
Limenitis sibylla, L.
Thecla pruni, L.
Polyommatus arion, L.
Cyclopides paniscus, Fabr.
Hesperia actæon, Esp.
Trochilium scoliæforme, Hübn.
Zygæna meliloti, Esp.
Z. exulans, Hoch.
Nola strigula, Schiff.
N. centonalis, Hübn.
Nola albulalis, Hübn.
Eulepia cribrum, L.
Porthesia chrysorrhœa, L.
Clisiocampa castrenis, L.
Drepana sicula, Schiff.
Diphthera orion, Esp.
Acosmetia caliginosa, Hübn.
Dianthœcia irregularis, Hübn.
Plusia orichalcea, Fabr.
Epione vespertaria, L.
Fidonia conspicuata, Schiff.
Scoria dealbata, L.
Cidaria reticulata, Fabr.
Lithostege griseata, Schiff.
Agrotera nemoralis, Scop.
Pterophorus rhododactylus, Schiff.

In these 32 species it will be seen that no fewer than 11 of our butterflies are considered as dangerously approaching extinction in these islands.

In the 'Athenæum' of June 19th was a reprint of Mr. Jno. Murray's list of publications as advertised in that magazine of Dec. 30th, 1837. This affords some reminiscence of the zoological publications at the commencement of the Jubilee reign. Besides well-known books, such as Mrs. Somerville on the Physical Sciences, and the fifth edition of Lyell's 'Principles of Geology,' we notice those well-known, though perhaps now little read volumes, 'The Journal of a Naturalist,' and Jesse's 'Gleanings in Natural History.'

Dr. Carlos Berg, the Director of the Museo Nacional of Buenos Ayres, is on a visit to Europe. We met this well-known naturalist in London quite recently, and he informed us that he returns to the Argentine Republic next October. The Rev. J. W. Holland, lepidopterist, of Pittsburgh, Pennsylvania, has also paid a visit to London. He is undoubtedly the possessor of one of the best, if not the best, collection of general Lepidoptera in the United States, which is particularly rich in African species.

A CORRESPONDENCE has recently been continued in the 'Saturday Review' on the alleged extermination of rare British birds. This has now been reprinted and issued as a leaflet by the Humanitarian League. We are glad to learn from the testimony of Sir Charles Dilke that the Kingfisher is not "near extinction," at least on the Thames. He writes:—"Mr. Collinson, in a letter to you on 'The Destruction of Rare Birds,' in which I agree, speaks of 'the near extinction' of the Kingfisher. This statement, which is often made, is an erroneous one, and may damage our case. Some years ago, when I gave evidence on behalf of the Thames users before the Select Committee on the Thames, I had to allude to Kingfisher-shooting, and the result was a clause which prevented all shooting on the river. Since that time the bird has increased on the Thames, and there are as many now as there were in 1863, when I first began to row much on the river. At Dockett Eddy I have two nests this spring, though I have seldom previously known more than one. A third pair was broken by a recent shooting case; but, owing to the public spirit of an innkeeper at Chertsey Bridge, prosecution and conviction followed."

[The Editor well remembers the year mentioned by Sir Charles Dilke as representing an epoch when the Kingfisher was no great rarity on the Thames. He was then an enthusiastic Roach-fisher, and when angling off an eyot above Hampton has, on more than one occasion, seen a Kingfisher alight and rest on his long bamboo-rod, while the bushes almost concealed himself from view.]

A NEW monthly, devoted to the lore of the area from which it takes its title, 'East Asia,' has just been launched, and the first number (July) has reached our hands. An article on the Cocos Keeling and Christmas Islands, based principally on a "British Blue-Book," contains an interesting zoological observation. Mr. Ross, who may be almost styled the proprietor of these coral islands, once witnessed a fierce combat between two huge Sharks, in water so shallow that they could not turn on their backs according to usage. "In this instance the creatures faced each other and dodged warily, while each made fierce attempts to reach the base of his antagonist's tail. As each parried the attack in turn, their jaws locked and remained so for a space, until they mutually disengaged. This fight continued for some considerable time, till at length, avoiding the jaws of his adversary, one seized the other by the vulnerable spot at which he aimed, killing him instantly with one crunch of his teeth."

FROM the Annual Report (1895–96) of the Curator—Prof. Alex. Agassiz—of the Museum of Comparative Zoology at Harvard College, we see that funds are not withheld from this well-known American institution. We are told that the Commonwealth came forward most generously, and sustained, often under most unpropitious circumstances, the interest it had shown in the Museum. From the treasury of the Commonwealth no less than 240,000 dols. has been received at various times, and up to the beginning of 1895 more than 1,580,000 dols. (exclusive of income) has been received from all sources, including the State grants, the subscriptions of friends, and the gifts of the family of Prof. Agassiz.

This large sum is represented by the buildings, exclusive of the botanical and mineralogical sections; by the collections and the work expended upon them; by the library, and an extensive series of publications (twenty quarto volumes of Memoirs and thirty octavo volumes of Bulletins); and by an endowment of over 580,000 dols., the income of which is available for the salaries and running expenses of the Museum of Comparative Zoology and its allied departments.

The Thirty-ninth Annual Report for the year 1896 of the Chicago Academy of Sciences has appeared, and the natural history collections of the Museum seem steadily increasing. This is particularly noticeable in the department of Mollusca. In 1895 the Academy acquired the collection of *Cypræa*, owned by Mr. Jno. Walton, of Rochester, N. Y., and the collection of *Muricidæ* owned by the Curator. "The first collection numbers 160 species and over a thousand specimens, among which are fine specimens of *pulchra, aurantium, thersites, exusta, decipiens, leucostoma*, &c. The *Muricidæ* number 112 species, represented by about 300 specimens, among which are a number of type-specimens, an excellent set of *Magilus antiquus*, showing tubular development, with the operculum, besides varietal sets of *Purpura, Murex, Eupleura*, &c.

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